

NATURAL RESOURCES CONSERVATION SERVICE
CONSERVATION PRACTICE STANDARD

CROSS WIND RIDGES

(Ac.)

CODE 589A

DEFINITION

Ridges formed by tillage, planting or other operations and aligned across the prevailing wind erosion direction.

PURPOSE

Reduce soil erosion from wind.

CONDITIONS WHERE PRACTICE APPLIES

This practice applies to cropland.

It is best adapted on soils that are stable enough to sustain effective ridges and cloddiness, such as clayey, silty, and sandy loam soils.

It is not well adapted on unstable soils such as sands, loamy sands, and certain organic soils.

CRITERIA

Ridge height, spacing, and direction.

Acceptable combinations of ridge height, spacing, and direction are those having a soil ridge roughness K_{rd} value equal to 0.8 or less during those periods when wind erosion is expected to occur. Wind erosion can occur through most of the year. However, the months of March and April are the primary periods for wind erosion to occur in Oklahoma. Ridge roughness is discussed in the National Agronomy Manual Subpart 502.32 and K_{rd} values are displayed in Exhibit 502-4 or Tables 502-5.

The National Agronomy Manual contains charts with the K_{rd} factors (soil ridge roughness factors) as they relate to the prevailing wind

erosion direction, row direction (angle of deviation), ridge height and row spacing (K_r), and soil "I" factor. The prevailing wind erosion direction for the erosive period will be used to determine the angle of deviation from the row direction. Each chart will have an angle of deviation identified at the top. The angle of deviation is defined as the angle between the prevailing wind direction and a line perpendicular to the row direction. Once the angle of deviation is established for row direction, select the appropriate chart. The angle of deviation is always between 0 to 90 degrees.

The K_r value (soil ridge roughness) can be determined using the following formula:

$$K_r = \frac{4(h)^2}{s}$$

where h = ridge height in inches

s = ridge spacing in inches

When fields being farmed on the contour (ex. terraced fields) exhibit no standard row direction to calculate the angle of deviation, a 45 degree angle of deviation will be used.

The WEQ computer program calculates the K_{rd} in the "Calc" worksheet of the program. The K_{rd} factor is found in the K_{rd} column of the worksheet.

The K_{rd} must be 0.8 or less for the months of March and April to meet the requirements of this standard.

CONSIDERATIONS

Transport of wind-borne sediment and sediment-borne contaminants offsite can be reduced by this practice when used in a resource management system.

PLANS AND SPECIFICATIONS

Specifications for establishment and maintenance of this practice shall be prepared for each field or treatment unit according to the Criteria, Considerations, and Operation & Maintenance described in this standard.

Specifications shall be recorded using approved specification sheets, job sheets, and narrative statements in the conservation plan or other acceptable documentation.

OPERATION AND MAINTENANCE

Ridges shall be established or re-established by equipment such as chisel plows, drills with

hoe openers, bedders, listers, or other implements that form effective ridges.

After establishment, ridges shall be maintained through those periods when wind erosion is expected to occur, or until growing crops provide enough cover to protect the soil from wind erosion.

If ridges deteriorate and become ineffective due to weathering, erosion, or change in expected prevailing wind erosion direction, they shall be re-established unless doing so would damage a growing crop.